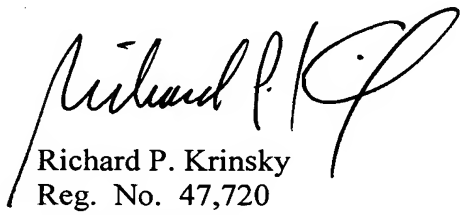
REMARKS

This Preliminary Amendment is to clarify portions of the Application, including the Specification and Claims, to add new claims and to add a replacement Abstract of the Disclosure. Also included are a Substitute Specification, a marked-up copy of the Substitute Specification showing the changes made and an English-translation of the International Application, including a translation of a German word in Figure 2. No new matter has been added.

The Application is now in condition for allowance, and such is respectfully requested.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in fees be credited, to the Account of Barnes & Thornburg LLP, Deposit Account No. 02-1010 (677/44545).

Respectfully submitted,



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OF SUBSTITUTE SPECIFICATION

~~FULL-JACKET HELICAL CONVEYOR CENTRIFUGE WITH DIRECT DRIVE~~

BACKGROUND AND SUMMARY

[0001] The ~~invention~~ present disclosure relates to a full-jacket helical conveyor centrifuge ~~according to the preamble of Claim 1~~ including a rotatably disposed, metallic drum with a horizontal axis of rotation. Also included is at least one drive device for the drum. A helical conveyor is also included which is rotatably disposed at a differential rotational speed with respect to the rotational speed of the drum. The helical conveyor can be rotated by a gearing by the at least one drive device for the drum or by another device.

[0002] It is known to drive centrifuges in many different manners. In the field of full-jacket helical conveyor centrifuges, it has caught on to equip the helical conveyor and the drum respectively with a driving device in order to be able to control these two elements separately from one another without any tie to a fixed transmission ratio. Such a state of the art is known from German Patent Document DE-A-2811887 or DE 1732887.

[0003] For driving the drum, a belt drive is generally used which has been successful in practice but which requires a relatively large amount of space and therefore, because of frictional heat in the event of a belt slip, generates high temperature at the belts and the pulleys and is also often relatively loud. A demand therefore exists for alternative drive concepts where a belt drive is avoided.

[0004] For example, in the case of laboratory centrifuges, electromagnetic drives are also known; such as magnets in a rotating beaker glass. Furthermore, from European Patent Document EP 0 930 099 B1, an electromagnetic transmission for driving a laboratory centrifuge is known which is connected behind an electric motor but which is not suitable for larger centrifuges, such as full-jacket helical conveyer centrifuges. A spinning

centrifuge in the manner of a magnetic drive is also illustrated in German Patent Document DE 74 26 623 U1.

[0005] The use of an axial-field electric motor in the case of a sugar drum-type centrifuge without a helical conveyor is also known from German Patent Document DE 33 25 566 C2. In contrast, a use on a full-jacket helical conveyor centrifuge has so far not been considered, probably because this type of centrifuge always also requires a drive for the helical conveyor and because an excessive heating of the product by way of the drum was also feared. An analogous situation applies to the solutions of German Patent Document DE 40 08 945 C2, which shows an evaporator - concentrator centrifuge, and German Patent Document DE 38 34 222 C2.

[0006] ~~It is an object of the invention to create~~The present disclosure relates to a full-jacket helical conveyor centrifuge having a drive as an alternative to a belt drive.

[0007] ~~The invention solves this task by means of the object of Claim 1.~~ The present disclosure further relates to a full-jacket helical conveyor centrifuge including a rotatably disposed drum and a drive device for the drum. The drive device for the drum includes at least one electromechanical direct drive having secondary elements arranged on the outer periphery of the drum or on the outer periphery of a part non-rotatably connected with the drum. Primary elements are arranged radially outside the secondary elements at a distance from the secondary elements and without contact. A propulsion force is generated by an electromagnetic field of travelling waves.

[0008] Accordingly, the drive device for the horizontally disposed drum has at least one electromechanical direct ~~drive(s)~~drive, whose primary or secondary elements ~~in a particularly preferred manner~~ are arranged directly at or on the drum or ~~– in a less preferred manner –~~whose primary and secondary elements are arranged at or on a part non-rotatably connected with the drum, and whose corresponding secondary or primary elements are arranged at a distance outside the drum or the part non-rotatably connected

with the latter with no contact between these~~, the~~. A propulsion force ~~being~~ is generated without gears by an electromagnetic field of travelling waves which advances outside the drum around the metallic drum or around the part non-rotatably connected with the latter. This can be implemented, for example, by a large number of successively controllable coils on the outer periphery of the drum which are used as the primary elements for generating the field of travelling waves in order to, in the process, take along a large number of the ~~particularly~~ permanent-magnetic secondary elements.

[0009] Thus, ~~the impressively~~a simple concept of a field of travelling waves, which is generated directly without an electric motor on the input side and which advances, for example, on the outer periphery of the drum around the drum and does not penetrate the latter like a rotating field, is utilized ~~in a simple manner~~ also for the direct drive of a centrifugal drum of a decanter with a helical conveyor. ~~As recognized by the invention~~According to the present disclosure, the helical conveyor can ~~definitely~~ also be driven in manner different from that of the drum, ~~thus,~~ for example, by ~~means of~~ a conventional rotating-field electric motor. The problem of the heat development of a product by ~~way of~~ the drum can also, against all expectations, be controlled in the case of a full-jacket helical conveyor centrifuge. In addition, a continuous rotational speed adjustment can take place ~~in a simple manner also~~ without a frequency converter.

[00010] ~~In this case, the~~A ratio between the inner axial dimension of the drum and its inside diameter is ~~preferably~~ greater than 1, ~~particularly~~ and may be greater than 2.5. ~~Specifically in the case of~~For such drums, the "field of travelling waves drive" can be accommodated in ~~a simple manner in the~~an area of the elongated drum without interfering with function elements at the axial ends of the drum.

[00011] ~~By means of the invention~~According to the present disclosure, a belt drive for the drum can be eliminated ~~in the most simple manner~~. Instead, an electromagnetic gearless direct drive is ~~surprisingly~~ used for the drum, which direct drive has a compact

construction while the torque is high and is easily controllable in a low-noise manner. As a result, a safety advantage is also obtained because the drum can be braked particularly rapidly by ~~means of~~ the direct drive.

[00012] ~~Particularly preferably, the~~The secondary elements of the at least one direct drive are arranged on the outer periphery of the drum or on the outer periphery of a part non-rotatably connected with the drum~~, and the~~. The primary elements are ~~in each case~~ arranged radially outside the secondary elements at a distance from these with no mutual contact. By ~~means of~~ this arrangement, a ~~particularly~~ compact ~~variant of the invention~~ embodiment is ~~easily~~ implemented and permits the complete elimination of a gear. Disadvantageous axial forces upon the bearing are avoided.

[00013] The ~~invention is suitable~~present disclosure is applicable for a use in the case of full-jacket helical conveyor centrifuges. There are many points of the drum of this type of a centrifuge on which [[-]], depending on the performance and constructively geometrical situation[[–]], one or more electromagnetic direct-drive devices for the drum can be arranged. The compact arrangement is ~~particularly~~ advantageous here because the drive device can be integrated completely into the decanter frame or the machine frame. Further advantages are the low generating of noise and, under certain circumstances, even vibration-damping characteristics. The forces acting upon the drum bearing which would be applied by a belt drive are eliminated.

[00014] ~~Theoretically,~~It is possible that several of the electromagnetic direct drives may also be arranged on the drum or the part non-rotatably connected with the drum.

[00015] The drum itself, particularly its cylindrical section~~, in contrast,~~ from a constructive point of view, ~~offers the particularly~~may offer a preferred site of the arrangement of the direct drive. Although a thermal influence affects the drum and the centrifugal material in this area, it generally can be kept low.

[00016] If, on the other hand, an attachment is used as an axial extension of the drum for

arranging the direct drive, an additional heat development of the product area by ~~way of~~ the drum is avoided. Nevertheless, a drive directly on the drum between the two main bearings ~~is~~ may be preferred, ~~particularly~~ because here also negative loads of the drive upon the main bearings can be largely avoided.

[00017] ~~Particularly preferably, the~~The primary or secondary elements surround the drum completely or in sections concentrically. The arrangement in sections thereby ~~clearly simplifies~~may simplify the constructive expenditures.

[00018] ~~In this case, it~~ It is also conceivable that the primary or secondary elements are arranged on a ring disk projecting radially from the drum or a part non-rotatably connected with this drum~~, which~~. The ring disk is non-rotatably connected with this drum~~/part~~ or part, and ~~that~~ the corresponding secondary or primary elements are arranged on a non-rotatable ring disk or on a ring, which is arranged, for example, in an axially offset manner parallel to the co-rotating disk.

[00019] The ~~field of usage of the invention is~~present disclosure is applicable to the full-jacket helical conveyor centrifuge~~; thus~~ such as, the so-called decanter having a helical conveyor, where a belt drive for the drum can be replaced. The helical conveyor can ~~arbitrarily~~ be driven in a different manner; for example, hydraulically or mechanically or by ~~way of~~ a gearing between the drum and the helical conveyor or by ~~way of~~ another direct drive with a field of travelling waves arrangement. In this case, a gearing between the drum and the helical conveyor can also be eliminated.

[00020] The ~~invention therefore also creates~~present disclosure addresses a full-jacket helical conveyor centrifuge with a rotatably disposed metallic drum and a rotatable helical conveyor as well as a drive device for the drum and a drive device for the helical conveyor~~, at~~. At least the drive device for the helical conveyor ~~having~~ has at least one electromechanical direct ~~drive(s)~~drive whose primary or secondary elements are arranged directly at or on a part non-rotatably connected with the helical conveyor, and whose

corresponding secondary or primary elements are arranged without contact at a distance outside this part~~, the~~. A propulsion force being generated without gears by an electromagnetic field of travelling waves ~~which~~ advances around the part non-rotatably connected with the helical conveyor. In this manner, a gearing between the drum and the helical conveyor could even be eliminated, so that the two elements can be controlled completely independently of one another. In this case, it ~~is~~ may be advantageous to further develop both drives, that is, the drive for the drum and that for the helical conveyor, as a direct drive.

[00021] It is conceivable that the drum and/or the helical conveyor have at least one play-free bearing around which or directly adjacent to which the respective electromagnetic direct drive is arranged.

[00022] ~~Preferably – but not necessarily –, the~~The drive device for the helical conveyor ~~is~~ may be constructed independently of the drive device for the drum.

[00023] It is ~~finally advantageous for~~conceivable that another co-rotating field of travelling waves motor is included to generate ~~(only)~~ the required differential rotational speed between the helical conveyor and the drum~~, so that it has only~~. Should this motor be only to generate the differential rotational speed, it may have small dimensions and ~~is~~ therefore be cost-effective.

~~**[00024]** Advantageous further developments are contained in the subclaims.~~

~~**25]**~~**[00024]** ~~In the following, the invention will be described in detail by means of an embodiment with reference to the figures.~~ Other aspects of the present disclosure will become apparent from the following descriptions when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

~~[26]~~[00025] Figure 1 is a sectional view of a full-jacket helical conveyor centrifuge ~~with~~ including a schematic representation of the drive device for the drum~~, which is shown in~~ having several alternative arrangements~~; and~~. according to the present disclosure.

~~[27]~~[00026] Figure 2 ~~are two~~is a schematic ~~views~~ view of a centrifugal ~~drums with~~ drum including a direct ~~drives for illustrating the~~drive as a method of operation ~~of the invention~~, according to the present disclosure.

DETAILED DESCRIPTION

~~[28]~~[00027] Figure 1 illustrates a full-jacket helical conveyor centrifuge 1 with a rotatably disposed drum 2 and a rotatably disposed helical conveyor 3~~, which~~. The helical conveyor 3 has a differential or different rotational speed with respect to the drum 2 in ~~the~~ an operation.

~~[29]~~[00028] The drum 2, as well as the helical conveyor 3, each have a cylindrical section 2a, 3a with at least one outlet 5 for a liquid phase as well as a tapering, for example, conical section 2b, 3b adjoining on one side and having an outlet 28 for a solids phase.

~~[30]~~[00029] On its cylindrical end, the drum 2 is closed off by a drum lid 4 which has the outlet 5 for the liquid phase, behind which, ~~purely~~ as an example, a chamber 6 is connected which has a centripetal pump 7 stationary in the operation and, in turn, followed by a discharge 8~~, but which~~. Outlet 5 can also be followed by a baffle plate or directly by a discharge (not shown ~~here~~).

~~[31]~~[00030] An inflow pipe 9 leads axially through the helical conveyor 3 or the helical conveyor body from the cylindrical end of the drum 2 into a distributor 10 which has openings 11 into ~~the~~ centrifugal space 12 between the drum 2 and the helical conveyor 3.

~~[32]~~[00031] Between the drum 2 and the helical conveyor 3, bearings 13, 14 are arranged on both sides of the drum 2. In addition, the drum 2 is disposed at its two axial ends by ~~means of~~ drum bearings 15, 16 on a machine frame ~~17~~ (not shown) ~~here~~.

~~[33]~~[00032] The drum 2 has several parts which are non-rotatably connected with it. These

include the chamber 6 for the centripetal pump 7 as well as ~~in each case~~ several cylindrical attachments 17, 18, 19, 20 of the drum 2 which, for example, may be arranged in the axial direction between the main drum bearings 15, 16 or laterally outside the main drum bearings 15, 16 on both axial ends of the drum 2. ~~The~~ A ratio between the axial inner dimension of the drum 2 and ~~the~~ a maximal inside diameter is greater than 1, ~~particularly~~ and may be greater than 2.5~~; particularly~~ or greater than or equal to 3. As an axial extension of its conical section 3b, the helical conveyor 3 has a shaft 21 which is adjoined by ~~the~~ a first drive device 22[[–]] for driving the helical conveyor 3~~–, which~~. The first drive device 22 ~~in this case~~ comprises a gearing 23 and an electric motor 24.

~~[34]~~**[00033]** At least one gearless electromagnetic direct drive 25a-f is used as ~~the~~ a second drive device or as the drive device for the drum 2. The electromagnetic direct drive 25a-f can ~~preferably~~ be arranged at different points of the drum 2 or on a part ~~preferably~~ non-rotatably connected with the drum 2, which ~~here is illustrated as an~~, for example ~~by the total of~~, is shown as six drive devices 25a-f. ~~It is also conceivable to provide~~ As suggested herein, several drive devices may be provided at the drum 2 or on ~~the~~ parts non-rotatably connected with the drum 2.

~~[35]~~**[00034]** Rotor or secondary elements 26 are ~~in each case~~ arranged on the cylindrical section 2a of the drum 2 or on a cylindrical part,[[~~(~~]] for example, ~~the~~ parts ~~with the reference numbers~~ 6, 17, 18, 19, 20[[~~)~~]], non-rotatably connected with the elongated drum 2~~, as well as primary~~. Primary elements 27 are arranged concentrically with respect to the secondary elements 26 and at a distance to the latter without contact. ~~Here,~~ At the ends of the drum 2, ~~at which~~ the discharges for the solids 28 and liquid phases ~~are situated~~ 8, remain free of elements of the drives 25a-f.

~~[36]~~**[00035]** The primary elements 27 may extend around the entire periphery of the drum 2 or only over a sector of a circle, for example, over a periphery of 90°.

~~[37]~~**[00036]** The electromagnetic direct drive 25a-f is constructed similarly to an

electromagnetic "linear motor"~~; except that the latter here,~~. However, the electromagnetic direct drives 25a-f are shown here, either completely or in sections~~—which constructively is particularly simple –~~, is, as guided around the drum 2 or the part non-rotatably connected with the drum. ~~In this case, a~~A plurality ~~of –~~, for example, more than eight,[[–]] primary elements 27,[[–]] such as respective coils,[[–]] are used to construct a magnetic field of travelling waves which virtually travels on the outside around the metallic full-jacket drum 2 and, in the process, takes along a plurality of,[[–]] for example, more than eight~~—in particular~~, permanent-magnetic or coil-type secondary elements 26 on the drum 2. This is ~~purely~~ schematically illustrated in Figure 2. The primary elements 27 surround the drum ~~preferably~~ 2, in sections or completely, and the secondary elements 26 surround the drum 2 completely.

~~38~~[00037] The secondary elements 26 ~~are preferably~~may be arranged on a cylindrical section 2a of the drum 2, ~~particularly~~ in ~~the~~ an area of the axial center ~~(for example, at 25d)~~, for example, see drive 25d, of the drum 2, or completely or in sectors around the ~~latter~~ drum 2 and ~~preferably~~ placed radially on the ~~latter~~drum 2.

~~39~~[00038] The cylindrical section ~~is the preferred~~2a may be a desired site ~~of~~ to place the drive, such as 25d. Here, the axial ends of the drum 2 remain free of any of the drive components 25a-f, ~~components for the drum,~~ which ~~simplifies~~ may simplify the construction of the drive arrangement.

~~40~~[00039] As an alternative, an axial attachment, such as 6, 18, 19, 20, 17 may be used on the drum 2, which ~~is~~ attachment 6, 18, 19, 20, 17 may be non-rotatably connected with the drum, and can be utilized for arranging the secondary elements 26. This attachments 6, 18, 19, 20, 17 can be arranged in the axial direction ~~preferably~~ inside or outside the drum bearings 15, 16 as well as as an axial extension of the drum 2 or on the conical section 2b of the drum [[-]](see attachment 17)[[–]]. Attachment 19 could ~~contain~~ include a gearing between the helical conveyor 3 and the drum 2. ~~This embodiment is less preferable.~~

~~41~~[00040] As an option[[/]] or alternative, the helical conveyor 3[[,]] can also be driven, for example, at the shaft 21 or at an element (not shown ~~here~~) non-rotatably connected with the ~~latter,~~ shaft 21 by ~~means of~~ a separate additional direct drive (~~also~~ not shown ~~here~~) in the manner of a direct drive for the drum 2. ~~In this case~~Thus, even a gearing between the drum 2 and the helical conveyor 3 could be eliminated.

~~42~~[00041] By ~~means of~~ a control unit, ~~which is not shown here~~(not shown) and which has no frequency converter, the rotational speed of the drive and thus of the drum 2 and/or the helical conveyor 3 can be arbitrarily adjusted.

[00042] Although the present disclosure has been described and illustrated in detail, it is to be clearly understood that this is done by way of illustration and example only and is not to be taken by way of limitation. The scope of the present disclosure is to be limited only by the terms of the appended claims.

~~Reference Symbols~~

~~Full-jacket helical conveyor centrifuge~~	~~1~~
~~drum~~	~~2~~
~~helical conveyor~~	~~3~~
~~cylindrical sections~~	~~2a, 3a~~
~~conical sections~~	~~2b, 3b~~
~~drum lid~~	~~4~~
~~outlet~~	~~5~~
~~chamber~~	~~6~~
~~centripetal pump~~	~~7~~
~~discharge~~	~~8~~
~~inflow pipe~~	~~9~~
~~distributor~~	~~10~~
~~openings~~	~~11~~
~~centrifugal space~~	~~12~~
~~bearing~~	~~13, 14~~
~~drum bearings~~	~~15, 16~~
~~attachments~~	~~17, 18, 19, 20~~
~~shaft~~	~~21~~
~~first drive device~~	~~22~~
~~gearing~~	~~23~~
~~electric motor~~	~~24~~
~~second drive device~~	~~25a to 25f~~
~~secondary elements~~	~~26~~
~~primary elements~~	~~27~~
~~solids outlet~~	~~28~~

~~CLAIMS:~~ I CLAIM:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) ~~Full-jacket helical conveyor centrifuge (1), having~~

~~a) a rotatably disposed, metallic drum (2) with a horizontal axis of rotation,~~

~~b) at least one drive device for the drum (2),~~

~~c) a helical conveyor (3) which is rotatably disposed at a differential rotational speed with respect to the rotational speed of the drum (2) and which can be rotated by way of a gearing by means of the first drive device for the drum or by way of another device for the helical conveyor (6) (3?),~~

~~characterized in that~~

~~d) at least the drive device for the drum (2) has at least one electromechanical direct drive (25a-f),~~

~~e) whose primary or secondary elements (26) are arranged directly at or on the drum (2) or at or on a part (6, 17, 18, 19, 20) non-rotatably connected with the drum (2),~~

~~f) and its corresponding secondary or primary elements (27) are arranged at a distance with respect to these without contact outside the drum (2) or the part (6, 17, 18, 19, 20) non-rotatably connected with the drum (2),~~

~~g) the propulsion force being able to be generated in a gearless manner by an electromagnetic field of travelling waves advancing around the drum (2) or around the part (6, 17, 18, 19, 20) non-rotatably connected with the drum (2).~~A full-jacket helical conveyor centrifuge, comprising:

a rotatably disposed metallic drum having a horizontal axis rotation;

a helical conveyor rotatably disposed at a different rotational speed with respect to a rotational speed of the drum, the helical conveyor being rotatable via a gearing by

a first drive device or the helical conveyor being rotatable by a second drive device for the drum;

the second drive device for the drum includes at least one electromechanical direct drive;

the at least one electromechanical direct drive includes either primary or secondary elements arranged either directly at or on the drum or arranged at or on a part non-rotatably connected with the drum, and also includes corresponding secondary or corresponding primary elements arranged at a distance with respect to and without contact with the primary and secondary elements, respectively, as well as being arranged outside the drum or the part non-rotatably connected with the drum; and

a propulsion force is generated in a gearless manner by an electromagnetic field of travelling waves advancing around the drum or around the part non-rotatably connected with the drum.

2. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to Claim 1, ~~characterized in that the~~wherein a ratio between ~~the~~ an inner axial dimension of the drum ~~(2)~~ and its inside diameter is greater than 1~~, particularly greater than 2.5~~.

3. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to Claim 1 ~~or 2~~, ~~characterized in that~~wherein the secondary elements ~~(26)~~ of the at least one electromechanical direct drive ~~(25a-f)~~ are arranged on ~~the~~ an outer periphery of the drum ~~(2)~~ or on ~~the~~ an outer periphery of ~~a~~ the part ~~(6, 17, 18, 19, 20)~~ non-rotatably connected with the drum ~~(2)~~, and the primary elements ~~(27)~~ are ~~in each case~~ arranged radially outside the secondary elements ~~(26)~~ at a distance from ~~these~~ the secondary elements and without contact.

4. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein one or more of the primary and~~/or the~~ secondary elements ~~(27)~~ surround the drum ~~(2)~~ completely or in sections concentrically and are used for generating the field of travelling waves.

5. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the primary or the secondary elements ~~(27)~~ are arranged on a ring disk projecting radially from the drum ~~(2)~~ or on a part non-rotatably connected with the drum ~~(2)~~, which ring disk is non-rotatably connected with the drum ~~(2)~~/or the part.

6. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the second drive device for the drum ~~(2) has several of the~~includes at least one electronic direct ~~drives~~drive ~~(25a-f)~~.

7. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 6, wherein ~~at~~ the least one ~~or more of the~~ electronic ~~drives (25a-f)~~drive is~~/are~~ arranged on an attachment of the drum ~~(2)~~ as an axial extension of the drum ~~(2)~~.

8. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that the~~Claim 1, wherein at least one cylindrical attachment ~~(18, 19, 20)~~ is arranged in ~~the~~ an axial direction between ~~the~~ main bearings ~~(15, 16)~~.

one cylindrical attachment ~~(18, 19, 20)~~ is arranged in ~~the~~ an axial direction between ~~the~~ main bearings ~~(15, 16)~~.

9. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 8, wherein the at least one ~~the~~ cylindrical attachment ~~(17)~~ is arranged on ~~the~~ an outer periphery of ~~the~~ a conical section ~~(2b)~~ of the drum ~~(2)~~.

10. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 8, wherein the at least one cylindrical attachment is a chamber ~~(6)~~ for receiving a centripetal pump ~~(7)~~.

11. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the primary elements ~~(27)~~ surround the drum in sections and the secondary elements ~~(26)~~ surround the drum completely.

12. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the primary elements include a plurality of successively controllable coils ~~are~~ distributed on ~~the~~ an outer periphery of the drum ~~as primary elements (27)~~ for generating the field of travelling waves which ~~travels~~ travel around the drum and ~~in the process takes~~take along a plurality of the~~, in particular, permanent-magnetic~~ secondary elements ~~(26)~~.

13. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the drum ~~(2)~~

~~has~~includes at least one play-free bearing ~~(15, 16)~~ around which or directly adjacent to which ~~the respective~~at least one electromagnetic direct drive is arranged.

14. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, further including a motor generating an additional co-rotating field of travelling waves ~~motor~~ generates the ~~differential~~ different rotational ~~speed~~ speeds between the helical conveyor and the drum.

15. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that~~Claim 1, wherein the first drive device for the helical conveyor is constructed independently of the second drive device for the drum.

16. (Currently Amended) ~~Full-jacket helical conveyor centrifuge (1) having a horizontally rotatably disposed, metallic drum (2) and a rotatable helical conveyor (3) as well as having a drive device for the drum (2) and a drive device for the helical conveyor (3), characterized in that~~

~~at least the drive device for the helical conveyor (3) has at least one electromechanical direct drive(s),~~

~~whose primary or secondary elements (26) are arranged directly at or on a part (21) non-rotatably connected with the helical conveyor (3),~~

~~and whose corresponding secondary or primary elements are arranged at a distance from these without contact outside this part,~~

~~the propulsion force being generated in a gearless manner by an electromagnetic field of travelling waves advancing around the part non-rotatably connected with the helical conveyor.~~A full-jacket helical conveyor centrifuge, comprising:

a horizontally rotatably disposed metallic drum;

a rotatable helical conveyor;

a first drive device for the drum;

a second drive device for the helical conveyor including at least one electromechanical direct drive;

the at least one electromechanical direct drive includes either primary or secondary elements arranged directly at or on a part non-rotatably connected with the helical conveyor and also includes corresponding secondary or corresponding primary elements arranged at a distance from and without contact with the primary or secondary elements, respectively, and outside the part; and

a propulsion force is generated in a gearless manner by an electromagnetic field of travelling waves advancing around the part non-rotatably connected with the helical conveyor.

17. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to Claim 16, ~~characterized in that~~wherein the first drive device for the drum ~~(2)~~ and the second drive device for the helical conveyor ~~(3)~~ are designed as electromagnetic direct ~~drive(s)~~drives.

18. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to Claim 17, ~~characterized in that no~~wherein a gearing is not arranged between the drum ~~(2)~~ and the helical conveyor ~~(3)~~.

19. (Currently Amended) ~~Full~~The full-jacket helical conveyor centrifuge according to ~~one of the preceding claims, characterized in that the~~Claim 1, wherein a

rotational speed of one or more of the drum and the helical conveyor can be adjusted continuously.

20. (New) The full-jacket helical conveyor centrifuge according to Claim 2, wherein the ratio is greater than 2.5.

21. (New) The full-jacket helical conveyor centrifuge according to Claim 12, wherein the secondary elements are permanently magnetic.